

AMENDMENT UNDER 37 C.F.R. § 1.116
Appln. No. 09/676,487

REMARKS

Upon entry of this Amendment, Claims 1 and 3 - 24 are all the claims pending in the application.

Claim 1 has been amended.

Claims 21-24 are added.

In amended Claim 1, formulae (6) and (7) have been cancelled. Claim 1 is amended to insert formula (8). No new matter has been added.

Claim 21 has been added which depends from Claim 1, wherein Q^3 of formula (8) represents a sulfur atom. The support for this claim is on page 19, lines 10-13 of the specification. No new matter has been added.

Claim 22 has been added, which depends from Claim 21, wherein at least one of R^d , R^e , R^f and R^g is an electron-withdrawing group. Support is found on page 25, line 12 and page 26, line 12. No new matter has been added.

Claim 23 has been added, which depends from Claim 12, wherein at least one of R^d , R^e , R^f and R^g is a sulfonyl group. The support for this claim is on page 26, line 7. No new matter has been added.

Claim 24 has been added, which depends from Claim 23, wherein at least one of R^d , R^e , R^f and R^g is a sulfonyl alkyl group. The support for this claim is compounds 62, 63 and 64 on page 44, example 21 on page 137 and example 33 on page 145.

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No new matter has been added; no further search is required; and the amendments to the claims put the application in immediate condition for allowance. Therefore, Applicants respectfully request that the amendment be entered.

Claims 1 and 9-10 are rejected under 35 U.S.C. §112, first paragraph, as failing to satisfy the written description requirement.

It is stated that, while Applicants have support for the specific compounds disclosed in the specification as compounds 9, 30, 35, 23 and 62-65, Applicants do not have support for the general formulae 6 and 7 as set forth in claim 1

In response, Applicants cancel formulae 6 and 7. Claim 1 is further amended to substitute formula 8. Formulae (6) and (7) have been cancelled in Claim 1. Claim 1 is amended to insert formula (8) wherein Q^3 represents an oxygen atom or sulfur atom; R^1 and R^2 each independently represents a hydrogen atom, an aliphatic group, an aromatic group, or heterocyclic group; L^1 and L^2 each independently represents a methine group which may be substituted; m represents an integer of 1 to 3; R^d , R^e , R^f and R^g each independently represents a hydrogen atom or a monovalent substituent; R^h represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group or a heterocyclic group. Formula (8) is supported by formula (4) on page 25 of the specification, the paragraph on page 25, starting from line 13 and the paragraph on page 26, starting from line 16. On page 28, line 9 and on page 30, line 21, 3,3-dimethyl indolenine and indolenine nuclei are disclosed, respectively. Compounds 62-65 on page 44 are examples of formula (8). Example 33 corresponds to a compound defined by formula (8). No new matter

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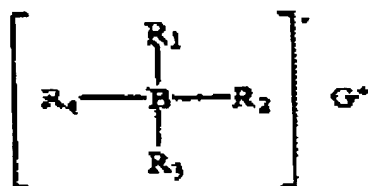
has been added. As amended, claim 1 satisfies the written description requirement of §112, ¶ 1.

Applicants respectfully request that the rejection be withdrawn.

Claims 1 and 9 are rejected under 35 U.S.C. §103(a) as being unpatentable over Cunningham et al. (US 6,011,180A) in view of Applicants' own disclosure and Kawamura et al. (US 5,061,605 A).

Initially, we note that the prior art rejections are very similar to the previous prior art rejections in this case.

Cunningham is asserted to disclose a compound of given formula I:



wherein R_1 is C_{1-20} alkyl, or an unsubstituted or substituted phenyl group; R_{2-4} are independently of one another an unsubstituted or substituted phenyl or biphenyl group; and G^+ is a radical which is able to form a positive ion.

It is asserted that formula (I) meets the limitations of claimed formula (A). The disclosed invention provides for a composition comprising (a) at least one ethylenically unsaturated compound; (b) at least one compound containing an acidic group which may also be present in

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component (a); (c) at least one photoinitiator of the given formula (I); and (d) if desired, at least one co-initiator.

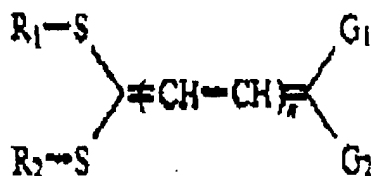
It is stated that, if the compounds of formula (I) do not contain a dye as counterion and at the same time the corresponding borate is not sufficiently absorptive, then it is expedient for the photopolymerization process to add at least one co-initiator or electron acceptor compound (d) to the composition. It is stated that the unsaturated compounds suitable as component (a) include esters of ethylenically unsaturated carboxylic acids and polyols or polyepoxides and polymers having ethylenically unsaturated groups in the chain or in side groups. Examples of unsaturated carboxylic acids are acrylic acid, methacrylic acid and cinnamic acid. It is asserted that the disclosed ethylenically unsaturated compounds (i.e., methacrylic acid and acrylic acid) meet the limitations of the instant claims.

Applicants' disclosure on page 93, line 4-page 95 is relied upon to show that methacrylic acid and acrylic acid are suitable examples of compounds having in the molecule an electron accepting group and a polymerizable group.

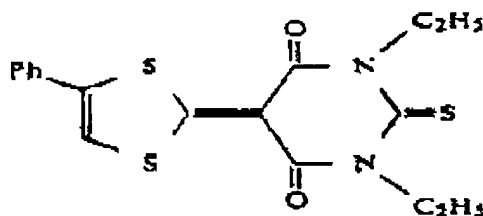
It is conceded that Cunningham fails to disclose a compound having the structure of Applicants' claimed formulae 6 or 7.

Kawamura (US '605) is therefore asserted to disclose a photopolymerization composition comprising a polymerizable compound having at least one ethylenically unsaturated double bond and a photopolymerization initiator represented by general formula (I):

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A specific example of formula I is exemplified by compound number 19 having the structure:



This is similar to the previous rejection, except that Kawamura is now being asserted to disclose a species falling within Applicants' claimed general formula 6.

In response, Applicants have amended the claims to recite general formula 8 provided in the specification and have cancelled formulac 6 and 7.

As amended Claim 1 does not recite the species asserted to be disclosed by Kawamura. Therefore, it is respectfully requested that the rejection be withdrawn.

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Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cunningham in view of Applicants' disclosure and Kawamura as applied to claims 1 and 9 above, and further in view of Gottschalk.

It is stated that one of ordinary skill would have been motivated by the teachings of Cunningham, as discussed above, to use the disclosed composition to make a multi-layered polychromatic material containing microcapsules.

Gottschalk (US 4,772,541 A) is asserted to disclose systems that are known, which comprise a photopolymerizable dispersion on a support in three separate layers. One layer contains a yellow color former and is sensitive to blue light; a second layer contains a magenta color former and is sensitive to green light, and a third layer contains a cyan color former and is sensitive to red light (col. 2, lines 18-42). It is asserted that it would have been obvious to one of ordinary skill to make the said multilayer polychromatic microcapsulate systems contain three photopolymerizable dispersions provided on a support in three separate layers as it is well known in the art.

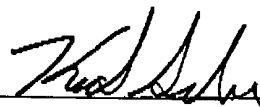
No new references have been applied to the rejection. The rejection instead relies upon the previously asserted prior art to reject Applicants' amended claims. Gottschalk does not appear to make up for the deficiencies of the art cited against amended claim 1 or claim 9 which depends on claim 1. Applicants assert that claim 10, which depends on claim 9, is not obvious for the reasons given above with respect to claim 9. Therefore, it is respectfully requested that the rejection be withdrawn.

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In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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WASHINGTON OFFICE



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PATENT TRADEMARK OFFICE

Date: March 18, 2003

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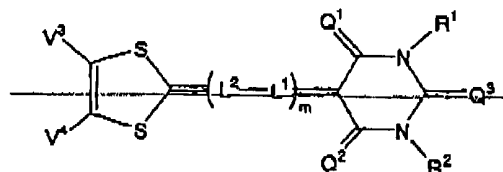
APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Amended) A photopolymerizable composition comprising:
a polymerizable compound having an ethylenically unsaturated bond;
at least one of a compound represented by either formula (6) (8):

Formula (6)

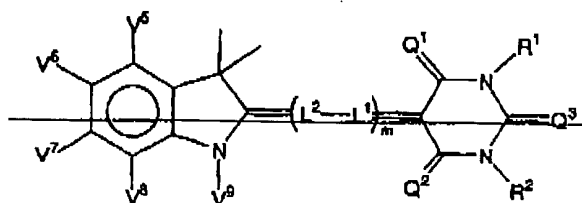


wherein Q¹ and Q² each represents an oxygen atom, Q³ represents an oxygen atom or a sulfur atom; R¹ and R² each independently represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; L¹ and L² each independently represents a methine group which may be substituted; m represents an integer of 0 to 3; V³ and V⁴ each independently represents a hydrogen atom or a monovalent substituent;

or a compound represented by the following formula (7):

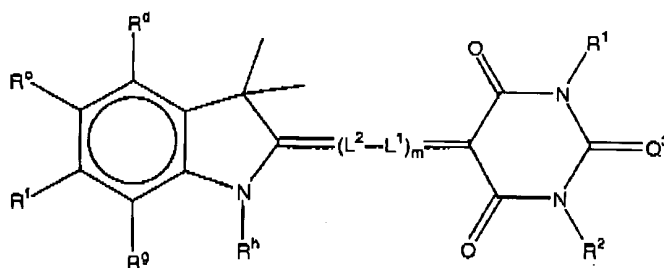
Formula (7)

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wherein Q^1 and Q^2 each represents an oxygen atom, Q^3 represents an oxygen atom or a sulfur atom; R^1 and R^2 each independently represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group; L^1 and L^2 each independently represents a methine group which may be substituted; m represents an integer of 0 to 3; V^6 to V^9 each independently represents a hydrogen atom or a monovalent substituent;

Formula (8)



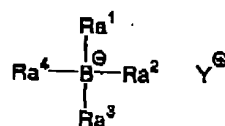
wherein Q^3 represents an oxygen atom or sulfur atom; R^1 and R^2 each independently represents a hydrogen atom, an aliphatic group, an aromatic group, or heterocyclic group; L^1 and L^2 each independently represents a methine group which may be substituted; m represents an integer of 0 to 3; R^d , R^e , R^f and R^g each independently represents a hydrogen atom or a monovalent

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substituent; R^b represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group or a heterocyclic group;

and an organoboron compound represented by the following formula (A):

Formula (A)



wherein R_a¹, R_a² and R_a³ each independently represents an aliphatic group, an aromatic group, a heterocyclic group, or -SiR_a⁵R_a⁶R_a⁷ where R_a⁵, R_a⁶, and R_a⁷ each independently represents an aliphatic group or an aromatic group; R_a⁴ represents an aliphatic group; and Y⁺ represents a group capable of forming a cation.

Claims 21-24 are added as new claims.